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The Currency of Reciprocity - Gift-Exchange in the Workplace

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Abstract

What determines reciprocity in employment relations? We conducted a controlled field experiment and tested the extent to which cash and non-monetary gifts affect workers' productivity. Our main finding is that the nature of the gift, not its monetary value, determines the prevalence of reciprocal reactions. A gift in-kind results in a significant and substantial increase in workers' productivity. An equivalent cash gift, on the other hand, is largely ineffective – even though an additional experiment showed that workers would strongly favor the gift's cash equivalent.

JEL classification: C93, J30.
Keywords: field experiment, reciprocity, gift exchange, fringe benefits, perks.

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"...only social exchange tends to engender feelings of personal obligations, gratitude, and trust; purely economic exchange as such does not."

Blau (1964, p. 94)

1 Introduction

How can firms motivate their employees to provide effort above the minimal level? This question is of great importance for both theorists and practitioners. Assuming that workers strictly pursue what is in their material self-interest, a large theoretical literature explores how explicit and implicit contracts can be designed so that the workers' interests are aligned with the firm's objectives (see MacLeod (2007), Prendergast (1999) or Gibbons (1998)). A different strand of literature, based on sociological and psychological insights, questions the assumption of purely self-interested humans, underlining the importance of reciprocity in the presence of contractual incompleteness (see Fehr and Gächter (2000) for an overview).[1] According to this view, paying above market-clearing wages (i.e. sharing part of the profits) can be profitable for firms if workers reciprocate positively to kind treatment and return the favor by exerting higher effort (see Akerlof (1982)). The determinants of reciprocity in naturally occurring employment relations

[1] By reciprocity we refer to the behavioral phenomenon of people responding towards (un)kind treatment likewise, even in the absence of reputational concerns. Economic theories formalize reciprocal behavior by incorporating the distribution of outcomes, the perceived kindness of intentions or simply emotional states as arguments into individual utility function (see Charness and Rabin (2002), Falk and Fischbacher (2006), Rabin (1993), Dufwenberg and Kirchsteiger (2004), or Cox et al. (2007)).

are largely unexplored, despite a wide range of potential economic implications such as downward wage rigidity and involuntary unemployment (see Bewley (1999)).

A substantial number of *laboratory* experiments provides empirical support for a positive relationship between fixed wages and effort, suggesting that reciprocal behavior can lead to large efficiency gains (e.g. see Fehr et al. (1993, 1997), Hannan et al. (2002), Brown et al. (2004) or Charness (2004)). However, the emerging experimental evidence from *naturally occurring* labor markets provides, at best, moderate or weak support for positive reciprocity. Output elasticities with respect to wages vary between only 0.07 and 0.38.[2] Until now, higher wages have thus led to relatively low and mostly insignificant productivity gains in labor market field experiments.[3] A potential explanation for this discrepancy between the field and the lab is that the attribution of volition (i.e. the perceived kindness associated with the pay raise) is more difficult in the field than in the lab, where the entire action space and potential payoffs are salient information (see Falk (2007) p. 1510).[4] A low or absent correlation between wages and productivity could thus be the result of weak kindness signals, not necessarily implying that reciprocity does not matter in the labor market.

[2] See Gneezy and List (2006), Kube et al. (2010), Cohn et al. (2009), Bellemare and Shearer (2009), Al-Ubaydli et al. (2006), and Hennig-Schmidt et al. (forthcoming) or Fehr et al. (2009) for an overview. See also Maréchal and Thöni (2010), Falk (2007) and List (2006) for gift-exchange experiments in other market and non-market settings.

[3] In contrast Kube et al. (2010) find a large *negative* impact of wage *cuts* on productivity.

[4] For example, if an agent knows that the principal can choose a wage from an interval between 1 and 100, it is clear that paying a wage of 100 to the agent is kind. One might therefore expect agents to be less reciprocal if they receive 100 without knowing that this is the highest possible wage. See Charness et al. (2004) or Hennig-Schmidt et al. (forthcoming) for evidence that payoff information crucially affects the prevalence of reciprocal behavior.

We hypothesize that, unlike a wage increase, non-monetary gifts or gifts in-kind provide a more salient signal of kind intentions and therefore represent a superior mechanism for the establishment of successful gift-exchange relations. In comparison with money, gifts in-kind are often considered to be more thoughtful and to more credibly reflect regard (see Ellingsen and Johannesson (2008) and Offer (1997)). Psychological survey studies suggest that money is considered unacceptable as a gift in many social relations (e.g. Webley et al. (1983) Webley and Wilson (1989) and Burgoyne and Routh (1991)).[5] In order to test our hypothesis, we conducted a controlled experiment in a naturally occurring work environment. We hired job applicants to catalog the books from a library for a *limited* time duration (i.e. excluding any possibility of reemployment) at an announced hourly wage of €12 - the amount actually paid out in our benchmark treatment.[6] In a second treatment, we implemented an unexpected wage increase of roughly 20%. As an alternative, we gave subjects a gift in-kind (thermos bottle) of equivalent monetary value instead of additional money in the third treatment. Subsequently, we ran an additional control treatment, where workers were told the actual price of the gift in-kind, eliminating any uncertainty with regard to its monetary value.

The results show that the *nature* of gifts crucially determines the prevalence and strength of reciprocal behavior. An increase in fixed wages has no significant impact on workers' productivity. However, a gift in-kind of equi-

[5] The distinction between social and monetary exchange is also stressed in the management and organizational psychology literature (e.g. see Blau (1964) or Cropanzano and Mitchell (2005) for a review). Dur (2009) developed a theoretical model predicting that socio-emotional resources are more effective in gift-exchange relations than wages.

[6] We emphasized the one-shot nature of this job offer in order to rule out reputational concerns, which are inherent in ongoing relations.

valent monetary value has an economically and statistically significant effect on productivity. Workers provide 30 percent more output on average. Moreover, this effect remains large and significant over the course of the entire working period. In contrast to all existing labor market field experiments, the elasticity of output towards the change in fixed compensation is remarkably high with 1.54, emphasizing that productivity gains exceed the relative increase in labor costs. We replicate the results with our additional control treatment where we explicitly communicated the exact monetary value of the gift. Treatment differences thus cannot be explained by systematic overestimation of the monetary value of the gift.

To track down potential explanations for the sharp behavioral contrast, we complement our field experiment with an experimental questionnaire study. We used scenarios describing our treatment manipulations from the field experiment to elicit how the gift is perceived. We find that the gift in-kind is significantly more likely to signal kind intentions than the wage increase. An additional choice experiment shows, however, that these differences are not due to a general preference in favor of the gift in-kind. When given the choice between actually receiving the gift in-kind and its cash equivalent, the overwhelming majority of subjects opts for the money. Taken together, these additional results corroborate the field data and suggest that the symbolic aspect of the gift rather than its monetary value determines the successful establishment of gift-exchange relations.

This paper contributes to the existing literature in several ways. First, the existing evidence for reciprocity and social preferences in general is almost exclusively based on lab experiments. However, it is not clear to what

extent these results can be generalized to naturally occurring markets (see DellaVigna (2009), Falk and Heckmann (2009) or Levitt and List (2007)). Laboratory experiments are generally characterized by a high level of experimenter scrutiny, which could create demand effects (see Zizzo (forthcoming)). Moreover, lab experiments generally do not involve the exertion of actual effort but simply monetary transfers. Subjects in our experiment do not know that they are part of an experiment and perform a typical student helpers' job. We are therefore able to observe them in a naturally occurring - but controlled - work environment.

Second, our results provide a novel behavioral rationale as to why a large and growing part of overall compensation takes the form of non-monetary benefits or perks (see Marino and Zabojnik (2006*a*) or Rajan and Wulf (2006)). Several theoretical arguments have been put forth in the literature to explain the use of perks. One of the most prominent explanations is based on the idea that firms can provide perks at lower costs due to economies of scale or exemptions from taxation (e.g. Lazear and Oyer (2007)). Other theories relate to agency problems (Marino and Zabojnik (2006*b*)) or the reduction of workers' effort costs (Oyer (2008)). In addition, our results suggest that a higher share of perks in the compensation mix can be profitable for the firm because workers are more likely to reciprocate positively to the receipt of perks.[7]

Finally, the widespread phenomenon of non-monetary gift-giving is puzz-

[7]See also Jeffrey (2009) for a laboratory study comparing *performance contingent* hedonic non-cash and cash incentives using a scrambled words task. By contrast our study analyzes the motivational power of *un*conditional gifts in the context of incomplete labor contracts.

ling from a standard economic point of view. We expect money to be superior to gifts in-kind, as gifts in kind do not necessarily match the recipient's preferences.[8] The results from our subsequent choice experiment support the latter argument and show that more than 90 percent of the subjects prefer receiving money to a gift in-kind. Despite this strong preference for cash, the gift in-kind has a substantially stronger effect on workers' productivity than the cash gift. This suggests that the monetary value of the gift is of lesser importance than its signaling character. Our results are thus encouraging for recent theoretical advances, analyzing the role of non-monetary gifts as costly signals (see Camerer (1988), Carmichael and MacLeod (1997), Prendergast and Stole (2001), Bolle (2001) and Ellingsen and Johannesson (2008)).

The remainder of this paper is organized as follows: In the next section, we describe the experimental design. Subsequently, we present and discuss the experimental results in Sections 3 and 4.

2 Experimental Design

In May 2007, the library of an economic chair at a German University had to be catalogued. We used this as an opportunity to run a field experiment and recruited students from all over the campus with posters. The announcement read that it was a one-time job opportunity for half a day (three hours), and that pay would amount to €12 per hour. The announced wage of €12 served as a reference point. About 300 students applied during the two month announcement phase. A research assistant picked 51 persons from

[8] Waldfogel (1993) for example demonstrated that holiday gift-giving can create a substantial deadweight loss.

the list of applicants. They were invited via email and asked to confirm the starting date, reminding them that the job would pay €12 per hour. Upon arriving, the subjects were seated in front of a computer terminal and a table with a random selection of books. Their task was to enter the books' author(s), title, publisher, year, and ISBN number into an electronic data base. This data entry task is particularly well suited for our experiment as it allows for a precise measurement of output and quality. Moreover, the task is relatively simple and can be done in isolation, allowing for better control than usually available in field settings.[9] Participants were allowed to take a break whenever necessary. A research assistant explained the task to them, strictly following a fixed protocol. Before subjects actually started to work, they were told their hourly wage and informed on any additional payments or benefits.

In a first wave, we conducted three different treatments. In our benchmark treatment "Base", we paid €12 per hour. In treatment "Money", subjects' total wage was increased unexpectedly by roughly 20% by paying them an additional €7 for the day. In treatment "Bottle", instead of the wage increase, subjects received a thermos bottle worth €7, which was wrapped in a transparent gift paper and which should therefore have clearly signaled that the employer wanted to be kind towards the worker.[10] The different gifts where communicated as follows: "We have a further small gift to thank you: You receive €7 (respectively: this thermos bottle) in addition." In total we

[9] Data entry tasks are therefore frequently used in field experiments (see Gneezy and List (2006), Kube et al. (2010), Kosfeld and Neckermann (2009) and Hennig-Schmidt et al. (forthcoming) for some recent examples).

[10] See Figure 5 for a picture of the thermos bottle.

had 17 subjects in the benchmark treatment, 16 in Money, and 15 in Bottle; three subjects failed to show up to work.

In a second wave, we invited 15 additional subjects to participate in a fourth treatment. Treatment "PriceTag" was analogous to Bottle, except that we explicitly mentioned the actual price of the thermos bottle and marked it with a corresponding price tag.[11] By comparing treatment PriceTag and Bottle, we asses the robustness of our results with regard to the uncertainty of the actual price of the gift.

The first wave of experiments took place over a 9 day period, with up to 6 subjects per day. The second wave took place on the subsequent three days. We avoided any treatment contamination through social interaction and invited subjects successively at different times (three in the morning and three in the afternoon). They were separated from each other in different rooms and sat in front of a computer terminal with internet access. Furthermore, all subjects interacted with the same female research assistant, circumventing any confounding experimenter effects.[12] The computer application recorded the exact time of each log, allowing us to exactly reconstruct the number of characters each person entered over time, without having to explicitly monitor work performance.[13] After 3 hours had elapsed, subjects completed a short questionnaire and were paid their total wage. In order to observe them in a natural work environment, subjects were not told that they were participating in an experiment.

[11] Subjects were told: "We have a further small gift to thank you: You receive this thermos bottle worth €7 in addition."

[12] The research assistant neither knew the purpose of the study nor the reason for the wage increase or gift.

[13] See Figure 4 in the Appendix for a screen shot of the computer application

We complemented our field experiment with a survey experiment in order to test how our treatment manipulations were perceived. For this purpose, we invited 2475 students via email to participate in an online survey in November 2007. None of these students had taken part in the previous field experiment, and each student was only allowed to participate once. Participation was incentivized by raffling off seven €40 vouchers to be spent at an international online-shop. Upon logging into the electronic survey, the 1036 respondents were randomly assigned to one of three scenarios. Each began with a short description of one of our treatments described above (Money, Bottle, or PriceTag). Afterwards, subjects had to put themselves in the position of the employee in the described situation, and were then asked to rate different statements about the situation, the employers' action, and the gift, using 5-point Likert scales.[14]

Finally, we elicited preferences for receiving cash or the thermos bottle in an incentive compatible way by conducting a laboratory experiment in December 2007 and January 2008 with 172 subjects. All subjects had just participated in an unrelated experiment. We then told them that they would receive an additional payment of €7 in excess of their current payoff, and that they could choose between receiving the amount in cash or receiving the thermos bottle worth €7. We used exactly the same thermos bottle in all of our studies, or a photograph of it in the survey study.

[14]Table 5 contains the exact wording of the questionnaire items.

3 Results

Randomization Check

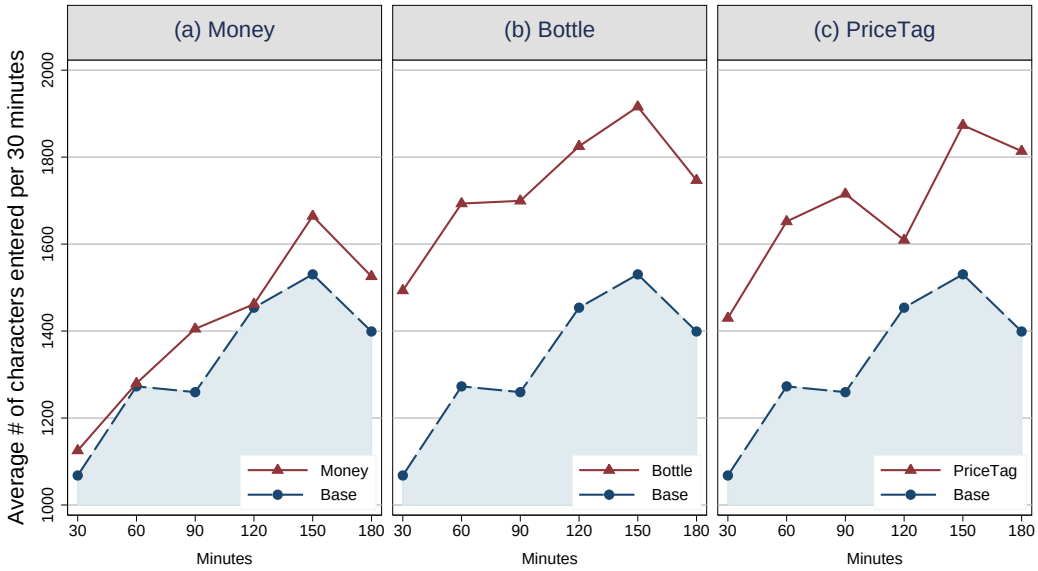
Table 3 reports summary statistics and tests whether observable covariates are balanced across treatments using Pearson's χ^2 or Kruskal-Wallis tests. We cannot reject the null hypothesis that observable worker characteristics and the environmental conditions are balanced across treatments. In summary, the randomization resulted in a fairly well balanced set of workers and environmental conditions. We include room fixed effects as well as starting-time fixed effects in all regression models.

Cash, Perks and Performance

The number of characters entered precisely measures workers' productivity and is considered as outcome variable for the subsequent analysis.[15] Figure 1 depicts the development of output over time for our three main treatments in comparison with treatment Base. Consistent with most previous field experiments involving monetary gifts, a wage increase of roughly 20 percent has only a small impact on productivity: Compared to the benchmark treatment, the average number of characters entered is approximately 6 percent higher in treatment Money. As can be inferred from Table 1 this difference does not reach statistical significance (Wilcoxon rank-sum test: p= 0.640). Result 1 summarizes this behavioral regularity:

[15] Our analysis focuses primarily on the quantity of output because we did not find any significant quality differences between treatments.

Figure 1: # Characters Entered per Time Interval by Treatment



Notes: This figure depicts the average number of characters entered per 30 minutes' time interval for treatment Money (a), Bottle (b), PriceTag (c) as well as work performance in the benchmark treatment Base.

Result 1: *An unexpected 20 percent increase in hourly wages has no significant impact on workers' productivity.*

The results from treatment Bottle, on the other hand, paint a completely different picture. Workers typed in on average roughly 30 percent more characters compared to treatment Base. Moreover, as illustrated in Figure 1 Panel (b), this treatment effect remains large for the entire duration of the experiment. In comparison, the gift raises the employer's costs by only 20 percent. Hence, the elasticity of output with respect to the increase in compensation amounts remarkable 1.54.

Table 1 highlights that the observed gift-exchange effect is also highly

significant from a statistical point of view. Using Wilcoxon rank-sum tests, the hypotheses of identical productivity between treatments Bottle and Base (as well as between Bottle and Money) are rejected ($p<0.01$). The main findings are summarized in our second result:

Result 2: *In contrast to the wage increase, a gift in-kind of equivalent monetary value results in a highly significant 30 percent productivity gain. This productivity gain is larger than the relative increase in labor costs.*

Table 1: Average Treatment Effects: # Characters Entered

	Base	**Money**	**PriceTag**
Bottle	+30%***	+23%***	+3%
PriceTag	+26%***	+19%**	
Money	+6%		

Notes: This table reports average treatment effects (in percentage) for all treatment comparisons (i.e. treatments indicated in the first column are compared with those in the first row). The outcome variable is the number of characters entered as a performance measure. Significance levels from a non-parametric (two-sided) Wilcoxon rank-sum test for the null hypothesis of equal output between treatments are denoted as follows: * $p<0.1$, ** $p<0.05$, *** $p<0.01$.

Workers might systematically overestimate the monetary value of the gift in treatment Bottle. This could potentially explain the larger treatment effect for Bottle relative to Money. Treatment PriceTag allows us to test whether systematic overestimation alone drives the observed pattern. Given that we communicate the exact monetary value of the gift, output should be lower in treatment PriceTag than in Bottle if workers reciprocate only on the basis of monetary considerations and if they systematically overestimate the price of the gift. The pattern in Panel (c) of Figure 1 reveals that treatment

PriceTag closely replicates the results from the Bottle treatment.

Workers are slightly more productive in treatment Bottle than PriceTag - i.e. measured output is 2.8 percent higher. However, this effect does not reach statistical significance (Wilcoxon rank-sum test: p=0.663). Similar to Bottle, treatment PriceTag resulted in a 26 percent higher output compared to the benchmark treatment (p=0.004). These productivity gains are still of greater magnitude than the increase in labor costs for the library. We summarize the results as follows:

Result 3: *We replicate Result 2 with treatment PriceTag. Workers produce almost an equal amount of output in treatments PriceTag and Bottle. In comparison with the baseline treatment, PriceTag results in a 26 percent increase in productivity. The uncertainty concerning the exact monetary value of the gift in-kind thus fails to account for our treatment effects.*

The cumulative distribution functions in Figure 2 show that our results are not driven by one or two single workers; instead they reflect a broad behavioral phenomenon. In comparison with the benchmark treatment, the distributions of the two in-kind gift treatments Bottle and PriceTag are clearly shifted towards higher performance levels. At the same time, the cumulative distribution function from treatment Money is closely intertwined with the one from Base. For example, the fraction of workers entering 9500 characters or less is around 40 percent in the two in-kind treatments. By contrast this fraction is larger than 80 percent in treatment Base.

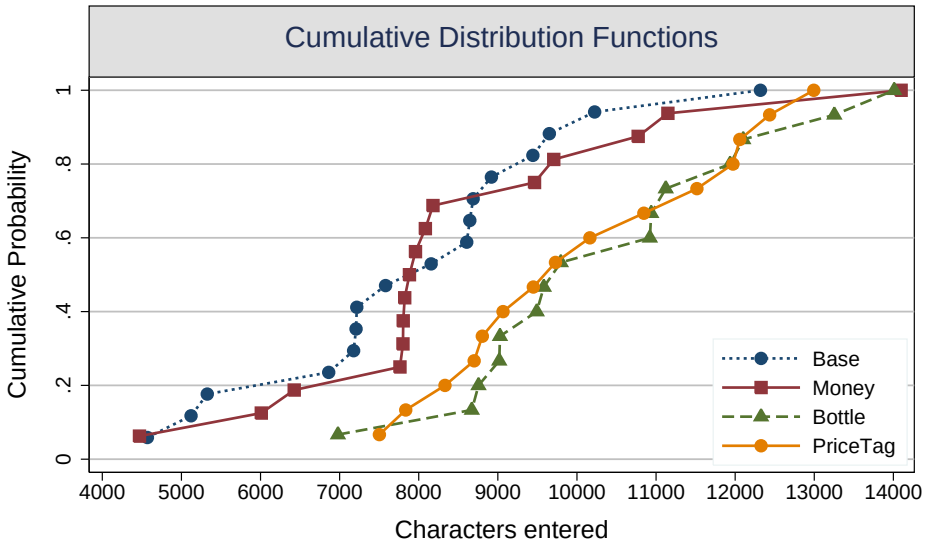
For our parametric regression analysis, we construct a panel data set by slicing the data into six 30 minutes' time intervals. Our benchmark model

Table 2: OLS Regression Results

	(1)	(2)	(3)	(4)
	———	**entries**	———	**correct entries**
Money	-7.923	-33.550	-3.874	17.609
	(123.508)	(111.551)	(115.187)	(112.853)
Bottle	418.767***	452.227***	584.644***	530.182***
	(107.038)	(113.198)	(144.851)	(160.605)
PriceTag	348.087***	386.540***	490.573***	453.876***
	(114.415)	(108.263)	(120.480)	(129.637)
Time	74.926***	74.926***	72.329***	63.983***
	(8.316)	(8.373)	(11.630)	(14.950)
Time*Money	16.881	16.881	20.620	9.304
	(13.054)	(13.144)	(16.344)	(19.643)
Time*Bottle	-16.033	-16.033	-4.420	-10.460
	(12.079)	(12.163)	(13.110)	(16.072)
Time*PriceTag	-4.145	-4.145	6.065	-1.605
	(18.903)	(19.033)	(22.006)	(18.607)
Constant	1092.045***	1574.682***	1228.622**	757.861
	(78.282)	(457.369)	(530.292)	(598.518)
Wald tests:				
Money=Bottle	0.001	0.000	0.000	0.001
Money=PriceTag	0.006	0.002	0.001	0.004
PriceTag=Bottle	0.534	0.621	0.555	0.661
Controls:				
Socioeconomic?	NO	YES	YES	YES
Previous wage?	NO	NO	YES	YES
Room FE?	YES	YES	YES	YES
Afternoon FE?	YES	YES	YES	YES
Obs.	378	378	294	294

Notes: This table reports OLS coefficient estimates (standard errors adjusted for clustering are reported in parentheses). The dependent variable is the number of characters entered per 30 minutes' time interval, respectively the number of characters from *correct* entries in column (4). The treatment dummies Money, Bottle and PriceTag are interacted with the variable Time which takes values from 0 to 5, indicating each time unit. Treatment Base is omitted and serves as the reference category. Definitions and summary statistics for the additional control variables are reported in Tables 4 and 3. Due to item non-response the sample size is lower in columns (3) and (4) where we control for previously earned hourly wages. P-values from a Wald test for the null-hypotheses of equal coefficients are reported below the coefficient estimates. Significance levels are denoted as follows: * p<0.1, ** p<0.05, *** p<0.01.

Figure 2: Performance Distributions



Notes: This figure illustrates the cumulative distribution functions for total work performance in all four treatments

has the following empirical specification:

$$Y_{it} = \alpha + \beta_1 G_i + \beta_2 T_{it} + \beta_3 G_i * T_{it} + \theta_i + \omega_i + \epsilon_{it}, \tag{1}$$

where Y_{it} represents the number of characters entered by worker i in time interval t. G_i is a vector consisting of dummy variables indicating our three different gift treatments. Treatment Base is omitted from the model and serves as the reference category. T_{it} indicates the six time intervals. We explore how the treatment effects evolve over time by interacting all treatment dummies with the time trend. Furthermore, vectors containing room (ω_i) and starting time (θ_i) fixed effects are included in our set of control variables. We estimated our model using Ordinary Least Squares (OLS). Standard errors

are corrected for clustering, accounting for individual dependency of the error term ϵ_{it} over time.

The results from the benchmark model are displayed in column (1) of Table 2. The coefficients for the two in-kind gift treatments, PriceTag and Bottle, are quite sizable and statistically highly significant (p=0.002 and p=0.001). The coefficient for Money, however, is close to zero and statistically insignificant. A Wald test rejects the hypothesis that the coefficient estimates are equal for Bottle (respectively PriceTag) and Money. On the other hand, we cannot reject the hypothesis that the coefficients for Bottle and PriceTag are equal. Furthermore, none of the interaction terms are significant, suggesting that treatment effects were stable during the experiment. The results also suggest the presence of a significant learning effect as indicated with the positive time trend.[16]

We conducted several robustness checks. First, the model in column (2) contains socioeconomic worker characteristics, like their age, gender and majors. Second we include the hourly wage earned at the most recent job prior to the experiment as a proxy for human capital (see column 3).[17] Overall, the results in Table 2 are insensitive with respect to the inclusion of these additional controls.

Third, in contrast to the quantity of output, *quality* is more difficult to observe for the employer. An important question is therefore, whether the observed productivity gain primarily stems from workers producing more low

[16] Alternatively, we specified a random effects model using GLS regressions. The results do not change with respect to the estimation method.

[17] The information about previous wages is missing for 14 workers. These subjects are therefore excluded from the sample when we control for previous wages.

quality output. In order to test for quality differences, we measure output quality by the ratio of faultless logs to the total number of books entered.[18] With a quality ratio of 80.8 percent, quality is lowest in the benchmark treatment. Treatment Money, Bottle, and PriceTag realized higher quality ratios (i.e. 85.7, 83.4, and 87.1 percent). Pairwise comparisons using Wilcoxon rank-sum tests indicate that qualities do not differ significantly in any treatments. Hence, if anything our results suggest that the opposite is true: Compared to the benchmark treatment, workers tend to produce output that is of slightly higher quality in all gift treatments. In column (4) we use the number of characters from correct entries as dependent measure. This is a composite measure of work performance, taking into account of both, the quantity and the quality dimension of effort. All previous results are robust to using this alternative performance measure.

Manipulation Check

The results from the survey experiment corroborate the observed behavioral patterns. Compared with treatment Money, subjects who were exposed to either the Bottle or PriceTag scenarios are significantly more likely to perceive the employer's course of action as kind. The results are basically the same if subjects are asked whether they feel treated kindly in the described situation. In contrast to the wage increase, the thermos bottle

[18] See Hennig-Schmidt et al. (forthcoming) and Kube et al. (2010) for a similar approach. Two research assistants searched for spelling mistakes in the titles (using an automatic spell check program) and ISBN numbers of the books.

is significantly more likely to be perceived as a gift and less as a payment for one's performance. Consistent with the behavior in our field experiment, there are no significant differences in perception between the treatments Bottle and PriceTag.[19]

We constructed a kindness index using all six items from the questionnaire by computing an unweighted mean of all answers. A Cronbach's alpha of 0.832 shows that the internal reliability is quite high and suggests that our kindness index is unidimensional.[20] The cumulative distribution functions of the kindness index depicted in Panel (a) in Figure 3 show that our gift in-kind is more likely to achieve a higher score for the kindness index than the €7 wage increase. The null-hypothesis that a cash gift and the gift in-kind are considered to be equally kind must be rejected on any conventional significance level (Wilcoxon rank-sum test: $p<0.001$ for both non-monetary treatments). The results from the manipulation check can be summarized as follows:

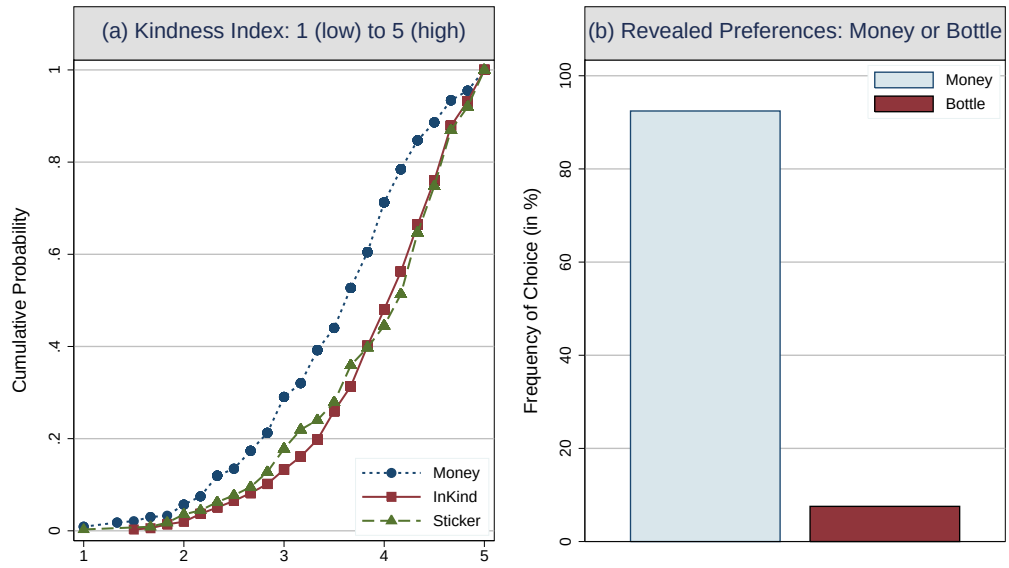
Result 4: *The gift in-kind is a stronger signal of kind intentions than is an equivalent wage increase.*

[19] See Table 5 for the corresponding significance levels.

[20] The Cronbach's alpha is a measure of internal consistency or reliability of a scale, where 1 is the highest possible value (see Cronbach (1951)). We recoded the negatively loaded variables in such a way that a higher number indicates less agreement with the statement. We dropped 11 observations from the sample because they did not answer all six questions. This does not change any of the results qualitatively.

Preferences for Money and Perks

Figure 3: Kindness Manipulation and Revealed Preferences



Notes: Panel (a) the cumulative distribution functions for the index of perceived kindness. Panel (b) compares the frequency of choice of the monetary and non-monetary gift.

Are our results driven by a general preference for the thermos bottle? In order to rule out this potential confound, we conducted an additional incentive compatible lab experiment.

We gave subjects in our lab experiment the actual choice between receiving an additional €7 or the thermos bottle used in the field experiment. We informed the subjects that the thermos bottle is worth €7. 159 out of 172 subjects (92.4%) opted for €7 in cash rather than the thermos of equivalent value (see Panel (b) of Figure 3). We reject the hypothesis that subjects are drawn from a population in which preferences for cash gifts and in-kind gifts

are equiprobable (binomial test, two-sided, $p<0.0001$). We thus conclude:

Result 5: *When subjects are free to choose between €7 in cash or the gift in-kind of equivalent value, more than 92 percent choose the money rather than the gift. The gift in-kind is thus very unlikely to match its recipient's preferences.*

4 Discussion and Conclusion

This paper analyzes the determinants of reciprocity in employment relations using a controlled field experiment. We document a sharp contrast in responses towards cash and non-monetary gifts. An unexpected increase in fixed wages has no statistically significant impact on the output workers generate. However, a gift in-kind of equivalent monetary value has an economically and statistically significant effect on productivity. The additional 20 percent increase in expenditures is rewarded by a sizably larger productivity gain of 30 percent.

Furthermore, in an additional control treatment we explicitly communicate the exact monetary value of the gift. The data from this control treatment replicate our main result, suggesting that treatment differences cannot be explained by the subjects' uncertainty concerning the true monetary value of the gift. Interestingly, as we illustrate in a follow-up experiment, the non-monetary gift has a stronger impact, despite an overwhelming preference for the gift's cash equivalent. Our survey study illustrates that our gift in-kind is perceived as a stronger signal for kind intentions than the wage increase is.

Together, these results suggest that the signal conveyed through the gift - and not its monetary value - determines the prevalence of reciprocal behavior.

These results have important methodological and practical implications. First, they point to a general problem when trying to transfer laboratory set-ups to the field, namely the decline of control over treatment manipulations. Applied to our design at hand, they imply that perceived kindness is probably more easily manipulated in the lab, especially when the range of possible actions and payoffs are clearly defined and common knowledge due to amplified salience. However, in the field "[...] the signal and perception of gifts is more ambiguous, which renders the establishment of a gift-exchange relationship difficult (Falk (2007) p. 1510)." Manipulation checks could therefore be a useful tool to understand disparities between field and lab evidence.[21]

Second, our findings suggest that appropriate gifts in-kind are likely to provide the recipient with a clearer and more salient signal of kind intentions than money. In fact, social scientists have found that money is sometimes deemed unacceptable as a gift (e.g. Webley et al. (1983) Webley and Wilson (1989) and Burgoyne and Routh (1991)).

Lea et al. (1987) argue for example that one reason for the unacceptability of money is that it puts an exact monetary value on a relationship. Money could thus potentially reframe a social exchange relationship into a market or commercial relation. The survey and lab experiments conducted by Heyman and Ariely (2004) provide evidence that is supportive of this argument. By contrast, our results from treatment PriceTag do not corroborate this

[21] See Perdue and Summers (1986) for a more extensive discussion of the importance of manipulation checks.

explanation. The observed treatment effect is equally large as in treatment Bottle, despite the salient communication of the gift's exact monetary value.

While our results show that a non-monetary gift is more likely to increase workers' productivity, it would be premature, however, to conclude that higher wages are generally not able to trigger reciprocity. Given that higher wages are communicated in a relatively neutral manner in our experiment - as well as in Gneezy and List (2006) and Kube et al. (2010) - future studies examining whether there is potential scope for increasing perceived kindness by choosing a more affective framing might be worthwhile.[22] Such framing could render the gift-character of the wage increase salient.

The superiority of the non-monetary gift is puzzling from a standard economic point of view, as we find that the gift in-kind is very unlikely to match the recipient's preferences. While we provide evidence suggesting that part of the superiority originates from signaled intentions, an additional factor might be that non-monetary gifts enable a kind of emotional attachment on part of the receiver that is much harder to establish with money. In this context, non-monetary incentives and symbolic awards (e.g. "employee of the month") can be a promising and cheap motivational instrument (see also Ellingsen and Johannesson (2007), or Frey and Neckermann (2008)). Non-monetary incentives and awards are further interesting since they are probably less likely than monetary incentives to crowd out workers' intrinsic motivation (see Heyman and Ariely (2004), Gneezy and Rustichini (2000) or Frey et al. (1996)).

Summing up, our results underline the importance of non-monetary as-

[22] See the discussion of framing effects and fairness in Kahneman et al. (1986).

pects in employment relations and show that reciprocity has its own currency which cannot be measured in terms of monetary value alone.

References

Akerlof, G. A. (1982): "Labor Contracts as Partial Gift Exchange", *Quarterly Journal of Economics*, Vol. 97, pp. 543–569.

Al-Ubaydli, O., S. Andersen, U. Gneezy, and J. List (2006): "For Love or Money? Testing Non-Pecuniary and Pecuniary Incentive Schemes in a Field Experiment", Working Paper.

Bellemare, C. and B. Shearer (2009): "Gift Giving and Worker Productivity: Evidence From a Firm-Level Experiment ", *Games and Economic Behavior*, Vol. 67, pp. 233–244.

Bewley, T.F. (1999): *Why Wages Don't Fall During a Recession*, Cambridge, Massachusetts: Harvard University Press.

Blau, P. M. (1964): *Exchange and Power in Social Life*, New York City: Wiley.

Bolle, F. (2001): "Why to Buy Your Darling Flowers - On Cooperation and Exploitation", *Theory and Decision*, Vol. 50, pp. 1–28.

Brown, M., E. Fehr, and A. Falk (2004): "Relational Contracts and the Nature of Market Interactions", *Econometrica*, Vol. 72, pp. 747–780.

Burgoyne, C. B. and D. A. Routh (1991): "Constraints on the Use ofMoney as a Gift at Christmas: The Role of Status and Intimacy", *Journal of Economic Psychology*, Vol. 12, pp. 47–69.

Camerer, C. (1988): "Gifts as Economic Signals and Social Symbols", *American Journal of Sociology*, Vol. 94 (Supplement), pp. S180–S214.

Carmichael, H. L. and B. W. MacLeod (1997): "Gift giving and the evolution of cooperation", *International Economic Review*, Vol. 38, pp. 485–509.

Charness, G. (2004): "Attribution and Reciprocity in an Experimental Labor Market", *Journal of Labor Economics*, Vol. 22, pp. 665–688.

Charness, G., G. R. Frechette, and J. H. Kagel (2004): "How Robust is Laboratory Gift Exchange?", *Experimental Economics*, Vol. 7, pp. 189–205.

Charness, G. and M. Rabin (2002): "Understanding Social Preferences with Simple Tests", *Quarterly Journal of Economics*, Vol. 117, pp. 817–869.

Cohn, A., E. Fehr, and L. Goette (2009): "Fairness and Effort: Evidence from a Field Experiment", Working Paper.

Cox, J. C., D. Friedman, and S. Gjerstad (2007): "A Tractable Model of Reciprocity and Fairness", *Games and Economic Behavior*, Vol. 59, pp. 17–45.

Cronbach, L. J. (1951): "Coefficient Alpha and the Internal Structure of Tests", *Psychometrika*, Vol. 297-334, pp. 297–334.

Cropanzano, R. and M. S. Mitchell (2005): "Social Exchange theory: An Interdisciplinary Review", *Journal of Management*, Vol. 31, pp. 874–900.

DellaVigna, S. (2009): "Psychology and Economics: Evidence from the Field", *Journal of Economic Literature*, Vol. 47, pp. 315–372.

Dufwenberg, M. and G. Kirchsteiger (2004): "A Theory of Sequential Reciprocity", *Games and Economic Behavior*, Vol. 47, pp. 268–298.

Dur, R. (2009): "Gift-Exchange in the Workplace: Money or Attention?", *Journal of the European Economic Association*, Vol. 7, pp. 550–560.

Ellingsen, T. and M. Johannesson (2007): "Paying Respect", *Journal of Economic Perspectives*, Vol. 21, pp. 135–149.

Ellingsen, T. and M. Johannesson (2008): "Generosity", Working Paper.

Falk, A. (2007): "Gift-Exchange in the Field", *Econometrica*, Vol. 75, pp. 1501–1511.

Falk, A. and U. Fischbacher (2006): "A Theory of Reciprocity", *Games and Economic Behavior*, Vol. 54, pp. 293–315.

Falk, A. and J. J. Heckmann (2009): "Lab Experiments Are a Major Source of Knowledge in the Social Sciences", *Science*, Vol. 326, pp. 535–538.

Fehr, E. and S. Gächter (2000): "Fairness and Retaliation: The Economics of Reciprocity", *Journal of Economic Perspectives*, Vol. 14, pp. 159–181.

Fehr, E., S. Gächter, and G. Kirchsteiger (1997): "Reciprocity as a Contract Enforcement Device", *Econometrica*, Vol. 65, pp. 833–860.

Fehr, E., L. Goette, and C. Zehnder (2009): "The Behavioral Economics of the Labor Market: Central Findings and their Policy Implications", *Annual Review of Economics*, Vol. 1, pp. 355–384.

Fehr, E., G. Kirchsteiger, and A. Riedl (1993): "Does Fairness Prevent Market Clearing? An Experimental Investigation", *Quarterly Journal of Economics*, Vol. 108, pp. 437–460.

Frey, B. and S. Neckermann (2008): "Awards - A View From Psychological Economics", *Journal of Psychology*, Vol. 216, pp. 198–208.

Frey, B. S., F. Oberholzer-Gee, and R. Eichenberger (1996): "The Old Lady Visits Your Backyard: A Tale of Morals and Markets", *Journal of Political Economy*, Vol. 104, pp. 1297–1313.

Gibbons, R. (1998): "Incentives in Organizations", *Journal of Economic Perpectives*, Vol. 12, pp. 115–132.

Gneezy, U. and J. A. List (2006): "Putting Behavioral Economics to Work: Testing for Gift Exchange in Labor Markets Using Field Experiments", *Econometrica*, Vol. 74, pp. 1365–1384.

Gneezy, U. and A. Rustichini (2000): "Pay Enough or Don't Pay At All", *Quarterly Journal of Economics*, Vol. 115, pp. 791–810.

Hannan, R. L., J. Kagel, and D. V. Moser (2002): "Partial Gift Exchange in an Experimental Labor Market: Impact of Subject Population Differences, Productivity Differences and Effort Requests on Behavior", *Journal of Labor Economics*, Vol. 20, pp. 923–951.

Hennig-Schmidt, H., B. Rockenbach, and A. Sadrieh (forthcoming): "In Search of Workers' Real Effort Reciprocity - A Field and a Laboratory Experiment", *Journal of the European Economic Association.*

Heyman, J. and D. Ariely (2004): "Effort for Payment: A Tale of Two Markets", *Psychological Science*, Vol. 15, pp. 787–793.

Jeffrey, S. A (2009): "Justifiability and the Motivational Power of Tangible Non-Cash Incentives", *Human Performance*, Vol. 22, pp. 143–155.

Kahneman, D., J. L. Knetsch, and R. Thaler (1986): "Fairness and the Assumptions of Economics", *Journal of Business*, Vol. 59, pp. 285–300.

Kosfeld, M. and S. Neckermann (2009): "Working for Nothing? The Effect of Non-material Awards on Employee Performance", Working Paper.

Kube, S., M. A. Maréchal, and C. Puppe (2010): "Do Wage Cuts Damage Work Morale? Evidence From a Natural Field Experiment", IEW Working Paper.

Lazear, E. P. and P. Oyer (2007): "Personnel Economics", NBER Working Paper No. 13480.

Lea, S. E. G., Tarpy R. M., and P. Webley (1987): *The Indivdual in the Economy*, Cambrige: Cambridge University Press.

Levitt, S. D. and J. A. List (2007): "What do Laboratory Experiments Measuring Social Preferences tell us about the Real World", *Journal of Economic Perspectives*, Vol. 21, pp. 153–174.

List, J. A. (2006): "The Behavioralist Meets the Market: Measuring Social Preferences and Reputation Effects in Actual Transactions", *Journal of Political Economy*, Vol. 114, pp. 1–37.

MacLeod, B. W. (2007): "Reputations, Relationships and Contract Enforcement", *Journal of Economic Literature*, Vol. 45, pp. 595–628.

Maréchal, M. A. and C. Thöni (2010): "Hidden Persuaders: Do Small Gifts Lubricate Business?", Working Paper.

Marino, A. M. and J. Zabojnik (2006*a*): "A Rent Extraction View of Employee Discounts and Benefits", Working Paper.

Marino, A. M. and J. Zabojnik (2006*b*): "Work-Related Perks, Agency Problems, and Optimal Incentives", Working Paper.

Offer, A. (1997): "Between the Gift and The Market: The Economy of Regard", *Economic History Review*, Vol. 50, pp. 450–476.

Oyer, P. (2008): "Salary or Benefits?", *Research in Labor Economics*, Vol. 28, pp. 429–467.

Perdue, B. C. and J. O. Summers (1986): "Checking the Success of Manipulations in Marketing Experiments", *Journal of Marketing Research*, Vol. 23, pp. 317–326.

Prendergast, C. (1999): "The Provision of Incentives in Firms", *Journal of Economic Literature*, Vol. 37, pp. 7–63.

Prendergast, C. and L. Stole (2001): "The Non-Monetary Nature of Gifts", *European Economic Review*, Vol. 45, pp. 1793–1810.

Rabin, M. (1993): "Incorporating Fairness into Game Theory and Economics", *American Economic Review*, Vol. 83, pp. 1281–1302.

Rajan, R. G. and J. Wulf (2006): "Are Perks Purely Managerial Excess?", *Journal of Financial Economics*, Vol. 79, pp. 1–33.

Waldfogel, J. (1993): "The Deadweight Loss of Christmas", *American Economic Review*, Vol. 83, pp. 1328–1336.

Webley, P., S. E. G. Lea, and R. Portalska (1983): "The Unacceptability of Money as a Gift", *Journal of Economic Psychology*, Vol. 4, pp. 223–238.

Webley, P. and R. Wilson (1989): "Social Relatioships and the Unacceptability of Money as a Gift", *Journal of Social Psychology*, Vol. 129, pp. 85–91.

Zizzo, D. J. (forthcoming): "Experimenter Demand Effects in Economic Experiments", *Experimental Economics*.

Appendix

Table 3: Summary Statistics and Randomization Check

Variable	Base (N=17) Mean	Base (N=17) Std. Dev.	Money (N=16) Mean	Money (N=16) Std. Dev.	Bottle (N=15) Mean	Bottle (N=15) Std. Dev.	PriceTag (N=15) Mean	PriceTag (N=15) Std. Dev.	Full Sample (N=63) Mean	Full Sample (N=63) Std. Dev.	Kruskal-Wallis/ χ^2 p-value
Age	23.176	2.856	21.875	1.746	22.200	2.336	23.067	2.120	22.587	2.325	0.271
Male	0.588	0.507	0.438	0.512	0.467	0.516	0.467	0.516	0.492	0.504	0.826
Math	0.118	0.332	0.125	0.342	0.000	0.000	0.000	0.000	0.063	0.246	0.274
Engineer	0.294	0.470	0.250	0.447	0.333	0.488	0.133	0.352	0.254	0.439	0.616
Social	0.176	0.393	0.438	0.512	0.467	0.516	0.533	0.516	0.397	0.493	0.169
Econ	0.353	0.493	0.188	0.403	0.200	0.414	0.267	0.458	0.254	0.439	0.683
Previous wage	8.468	1.921	9.376	2.743	8.825	1.323	9.029	1.557	8.949	1.983	0.757
Room A	0.176	0.393	0.438	0.512	0.267	0.458	0.267	0.458	0.286	0.455	0.415
Room B	0.294	0.470	0.375	0.500	0.400	0.507	0.400	0.507	0.365	0.485	0.911
Room C	0.529	0.514	0.188	0.403	0.333	0.488	0.333	0.488	0.349	0.481	0.231
Afternoon	0.412	0.507	0.563	0.512	0.533	0.516	0.467	0.516	0.492	0.504	0.826

Notes: The last column of this table contains p-values from Pearson's χ^2 tests for binary and Kruskal-Wallis tests for non-binary controls. Due to item non-response concerning previous wage levels the corresponding sample sizes are lower than for the other variables: Base (N=12), Money (N=14), Bottle (N=10) and PriceTag (N=13).

Table 4: Control Variables: Wording and Coding (Translated from German to English)

Variable	**Definition**	**Question wording [Possible answers in brackets]**
Socioeconomic		
Age	years	Age? [free form]
Male	1=yes; 0=no	Gender? [free form]
Math and Physics	1=yes ; 0=no	Major? [free form]
Engineering and Computer Sciences	1=yes ; 0=no	
Arts and Social Sciences	1=yes ; 0=no	
Economics	1=yes ; 0=no	
Previous wage		
Previous wage	Euro per hour	What was your hourly wage on your last job? [free form]

Table 5: Survey Experiment: Gift Perception Across Treatments

item	**Money** vs **Bottle**	**Money** vs **PriceTag**	**Bottle** vs **PriceTag**
feel treated kindly	$p = 0.0425$	$p = 0.0303$	$p = 0.8979$
	(N=335 / N=355)	(N=335 / N=340)	(N=355 / N=340)
feel treated unkindly	$p = 0.0019$	$p = 0.0734$	$p = 0.1876$
	(N=335 / N=355)	(N=334 / N=340)	(N=355 / N=340)
kind behavior	$p = 0.0156$	$p = 0.0019$	$p = 0.4474$
	(N=336 / N=357)	(N=336 / N=341)	(N=357 / N=341)
unkind behavior	$p = 0.0452$	$p = 0.0019$	$p = 0.2226$
	(N=335 / N=356)	(N=335 / N=339)	(N=356 / N=339)
perceive as gift	$p = 0.0000$	$p = 0.0000$	$p = 0.1838$
	(N=334 / N=354)	(N=334 / N=337)	(N=354 / N=337)
perceive as payment	$p = 0.0000$	$p = 0.0000$	$p = 0.4816$
	(N=334 / N=354)	(N=334 / N=337)	(N=354 / N=337)
kindness index	$p = 0.0000$	$p = 0.0000$	$p = 0.9693$
	(N=334 / N=354)	(N=334 / N=337)	(N=354 / N=337)

Notes: This Table reports significance levels from a (two-sided) Wilcoxon rank-sum test for the null hypothesis of equal scores between treatments (i.e. vignettes). The outcome variables are the scores of the item in the specific row. Number of observations are reported in parentheses.

Table 6: Data Overview: Number of Characters (Books) Entered and Quality

Treat.	ID #	Total Time Chars.	Total Time Books	Quality ratio	Treat.	ID #	Total Time Chars.	Total Time Books	Quality ratio
Base	1	4570	44	0.727	**Money**	18	4470	50	0.920
	2	5122	55	0.582		19	6010	71	0.958
	3	5327	42	0.929		20	6426	60	0.883
	4	6862	75	0.613		21	7763	77	0.948
	5	7177	76	0.961		22	7801	77	0.883
	6	7208	78	0.936		23	7804	80	0.950
	7	7217	75	0.933		24	7823	82	0.744
	8	7581	66	0.909		25	7883	87	0.920
	9	8157	57	0.912		26	7959	84	0.917
	10	8607	93	0.849		27	8084	76	0.947
	11	8646	105	0.914		28	8180	91	0.846
	12	8688	97	0.938		29	9464	100	0.980
	13	8919	95	0.832		30	9707	96	0.948
	14	9443	99	0.990		31	10774	94	0.777
	15	9651	106	0.915		32	11150	112	0.973
	16	10224	112	1.000		33	14098	148	0.912
	17	12320	136	0.743					
	Avg.	*7983.5*	*83.0*	*0.872*		*Avg.*	*8462.3*	*86.6*	*0.908*
Bottle	34	6979	61	0.820	**PriceTag**	49	7503	77	0.935
	35	8671	82	0.768		50	7836	82	0.951
	36	8756	74	0.932		51	8332	86	0.942
	37	9018	92	0.913		52	8701	93	0.978
	38	9027	90	0.811		53	8804	103	0.942
	39	9492	93	0.946		54	9066	79	0.899
	40	9581	98	0.929		55	9449	99	0.929
	41	9796	106	0.877		56	9729	91	0.769
	42	10922	108	0.870		57	10164	104	0.683
	43	10939	112	0.893		58	10846	92	0.967
	44	11123	119	0.824		59	11517	116	0.888
	45	11936	126	0.921		60	11972	109	0.917
	46	12102	103	0.951		61	12059	137	0.971
	47	13254	120	0.967		62	12436	115	0.930
	48	14011	102	0.941		63	12994	136	0.934
	Avg.	*10373.8*	*99.1*	*0.894*		*Avg.*	*10093.9*	*101.3*	*0.910*

Figure 4: Screenshot: Computer Application

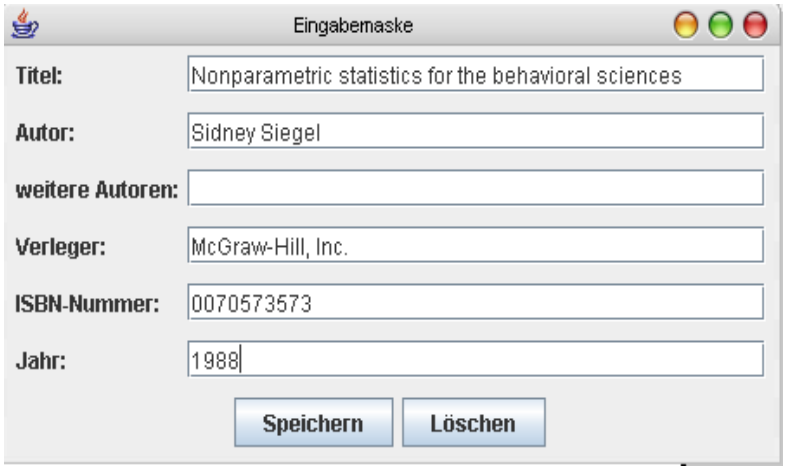


Figure 5: Gift In-Kind: Thermos Bottle